

REMARKS

These remarks attend to all issues presented in the Office Action mailed July 24, 2007. Claims 1-53 are pending in the application. Claims 17-23, 26 and 45-49 are withdrawn from consideration.

Claim Rejections – 35 U.S.C. § 103

The following is a quotation from the MPEP setting forth the three basic criteria that must be met to establish a *prima facie* case of obviousness:

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP §2142, citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Claims 1-5, 7-16, 24, 25, 27-33, 41, 42 and 54 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over PCT Publication No. WO 00/13521 to Wang *et al.* (hereinafter “Wang”).

Wang discloses a chewable pet toy made from a protein-based thermoplastic composition containing plant and animal derived proteinaceous material and various additive and nutrient ingredients. The Examiner cites Example 7 of Wang which discloses the use of approximately 50% soy protein isolate (i.e., grain protein) and approximately 10% animal protein, and states that “[a]lthough it is not specified in this example that the animal-derived protein is hydrolyzed, it would have been obvious to one having ordinary skill in the art to have hydrolyzed same...to contribute to or provide better processing flowability (see page 3).” (Office Action of July 24, 2007, p. 2)

The Examiner recognizes that “[a]lthough Wang does provide in the examples a temperature strategy for extruding the pellets, there is no restriction on the temperature to be used other than providing a product having good flow when used in preparing the injected molded article.” (Office Action of July 24, 2007, p. 3) We note, however, that decreasing Wang’s extrusion temperature will increase the

viscosity of the extruded mixture and reduce flowability. There is thus no motivation to simultaneously utilize hydrolyzed protein, in an attempt to improve flowability, and decrease extrusion temperature to avoid heat denaturation. The Court has held that references cannot properly be combined (together or with common knowledge) if to do so would destroy that on which the invention of the primary reference is based. See, *Ex Parte Hartmann*, 186 USPQ 366, 367 (POBA 1974).

The Examiner further argues that Wang's protein does not become substantially heat denatured during extrusion:

"...the temperature strategy employed, for example, in Example 1 [of Wang], would not result in a grain protein that is denatured, if at all, particularly since the exposure to such temperatures is not long enough to cause denaturation. As further evidence it should be noted that a corn gluten meal is denatured by treating same to a temperature of 100-120 C for 30-300 minutes. (See, for example, claim 1 of Carlson et al U.S. Patent No. 5759223.) It is expected that exposure of the grain protein mixed with the other components as well as the moisture content therein would further facilitate avoidance of and protection from notable denaturation using the temperature strategy specifically set forth in the Examples of Wang." (Office Action of July 24, 2007, p. 3)

The Examiner cites Carlson to show that high temperatures and long heating times denature corn gluten meal. Carlson does not, however, teach or suggest that such conditions are necessary to denature corn gluten meal, but rather only that they are sufficient. In fact, Carlson states, "...heat drying is generally performed at a temperature of from about 100° C. (212° F.) to about 120° C. (248° F.)...from about 30 minutes to about 300 minutes, ***such that the resulting corn gluten meal has a moisture content of less than about 10%.***" (col. 12, lines 42-47, emphasis added). Thus, the conditions disclosed by Carlson are used to produce a desired moisture content. There is no indication that Carlson's conditions are necessary to cause protein denaturation.

We further note that the Office appears to contradict its position that Wang's extrusion temperatures do not lead to protein denaturation by recognizing that similar conditions used in U.S. Patent No. 5,523,293 granted to Jane *et al.* lead to a "...likely denatured final product." (Office Action of July 24, 2007, p. 8)

In response to the Examiner's assertion that "...exposure of the grain protein mixed with the other components as well as the moisture content therein would further facilitate avoidance of and protection from notable denaturation...", we respectfully point out that water is generally regarded as facilitating thermal denaturation of proteins because hydration causes swelling which increases chain mobility and flexibility. When the hydrated protein is heated, the flexible structure provides greater access to internal hydrogen bonds and salt bridges than an unhydrated structure otherwise would. We respectfully traverse the Examiner's use of Official Notice on this point, and request supporting evidence in the manner dictated by MPEP 2144.03(C).

In summary, the Examiner has attempted to provide evidence that Wang's protein might not be denatured by extrusion. However, Carlson fails to show that which the Examiner asserts, and contradicting opinions are presented in the Office Action of July 24, 2007. We maintain that Wang fails to disclose every element of Applicants' independent claim 1 (and all claims dependent thereon). Specifically, Wang fails to disclose 'grain protein in the pellets that is substantially undenatured.' Further, there is no teaching or suggestion to modify Wang's extrusion conditions, nor an expectation that the existing conditions will not lead to denaturation.

Claims 2-5, 7-16, 24, 25, 27-33, 41 and 42 depend from claim 1, and benefit from arguments presented above. Further, these claims contain additional features that patentably distinguish over Wang. For example, claims 7-9 recite specific amounts of hydrolyzed protein suitable for use in the resin formulations. Wang does not disclose a particular amount or range of hydrolyzed protein. Claims 10-16 relate to hydrolyzed protein derivatives. Wang fails to disclose hydrolyzed protein derivatives. In particular, claim 11 recites a hydrolyzed protein derivative comprising a reaction product of a protein hydrolyzate with at least one reagent selected from the group consisting of an anhydride, ethylene oxide, propylene oxide, fatty acid, reducing sugars, maltodextrin, oligosaccharide, and dextrin. Wang is silent as to reactions involving protein hydrolyzates. Claims 12 and 13 depend directly from claim 11, and benefit from like argument.

Withdrawal of the 103 rejection over Wang is respectfully requested.

3. Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Wang and U.S. Patent No. 6,159,516 granted to Axelrod *et al.* (hereinafter "Axelrod").

Axelrod discloses a process for forming starch into a molded article using melt processing techniques. The process combines starch and water to form a mixture, which is then heated in an extruder. The extrudate is injection molded and cooled to form a molded article. The disclosed process may be used to produce edible starch products for animals or chew toys for pets.

Claim 6 depends from claim 1, and benefits from arguments presented above. Reconsideration of claim 6 is respectfully requested.

4. Claims 34-37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wang and U.S. Patent Application Publication No. 2003/0219516 to Pater *et al.* (hereinafter "Pater").

Pater discloses a pet chew based on starch that may be native or chemically modified, e.g., oxidized, carboxymethylated, hydroxyalkylated, acetylated, or (partially) hydrolyzed.

Claims 34-37 depend from claim 1, and benefit from arguments presented above. Reconsideration of claims 34-37 is respectfully requested.

5. Claims 34-36, 38-44 and 50-53 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wang and U.S. Patent No. 5,523,293 granted to Jane *et al.* (hereinafter "Jane").

Jane discloses biodegradable, thermoplastic compositions made from the reaction product of soybean protein, a carbohydrate filler, a reducing agent, a plasticizer, water and optional additives. The compositions may be processed by extrusion and injection molded into solid articles suitable for consumption by mammals.

Claims 34-36, 38-44 and 50-53 depend from claim 1, and benefit from arguments presented above. Reconsideration of claims 34-36, 38-44 and 50-53 is respectfully requested.

CONCLUSION

In view of the above Remarks, Applicants have addressed all issues raised in the Office Action dated July 24, 2007, and respectfully solicit a Notice of Allowance. Should any issues remain, the Examiner is encouraged to telephone the undersigned attorney.

Authorization to charge fees associated with a Request for Continued Examination, a three-month extension of time and the fee under 37 CFR 1.17(i) is submitted herewith. If any additional fee is deemed necessary in connection with this Response, please charge Deposit Account No. 12-0600.

Respectfully submitted,

LATHROP & GAGE LC

A handwritten signature in dark ink, appearing to read "David J. Lee", is written over a horizontal line.

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January 24, 2008